

Администрирование сетевых подсистем

Лабораторная работа №10

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Цели и задачи

Цель работы

Приобретение практических навыков настройки SMTP-сервера:

- LMTP
- SMTP AUTH (SASL)
- SMTP over TLS
- интеграция Postfix и Dovecot

Процесс выполнения

Добавление протокола LMTP

```
1 ## Dovecot configuration file
2
3 # If you're in a hurry, see http://wiki2.dovecot.org/QuickConfiguration
4
5 # "doveconf -n" command gives a clean output of the changed settings. Use it
6 # instead of copy&pasting files when posting to the Dovecot mailing list.
7
8 # '#' character and everything after it is treated as comments. Extra spaces
9 # and tabs are ignored. If you want to use either of these explicitly, put the
10 # value inside quotes, eg.: key = "# char and trailing whitespace"
11
12 # Most (but not all) settings can be overridden by different protocols and/or
13 # source/destination IPs by placing the settings inside sections, for example:
14 # protocol imap { }, local 127.0.0.1 { }, remote 10.0.0.0/8 { }
15
16 # Default values are shown for each setting, it's not required to uncomment
17 # those. These are exceptions to this though: No sections (e.g. namespace {})
18 # or plugin settings are added by default, they're listed only as examples.
19 # Paths are also just examples with the real defaults being based on configure
20 # options. The paths listed here are for configure --prefix=/usr
21 # --sysconfdir=/etc --localstatedir=/var
22
23 # Protocols we want to be serving.
24
25 protocols = imap pop3 lmtp
26
```

Рис. 1: Screenshot

Настройка сервиса LMTP

```
Open ▾ + 10-master.conf /etc/dovecot/conf.d

45 }
46 }
47
48 service submission-login {
49   inet_listener submission {
50     #port = 587
51   }
52   inet_listener submissions {
53     #port = 465
54   }
55 }
56
57 service lmtp {
58   unix_listener /var/spool/postfix/private/dovecot-lmtp {
59     group = postfix
60     user = postfix
61     mode = 0600
62   }
63 }
64
```

Рис. 2: Screenshot

Формат логинов для аутентификации

```
41
42 # Username character translations before it's looked up from databases. The
43 # value contains series of from -> to characters. For example "#@/@" means
44 # that '#' and '/' characters are translated to '@'.
45 auth_username_translation =
46
47 # Username formatting before it's looked up from databases. You can use
48 # the standard variables here, eg. %Lu would lowercase the username, %n would
49 # drop away the domain if it was given, or "%n-AT-%d" would change the '@' into
50 # "-AT-". This translation is done after auth_username_translation changes.
51
52 auth_username_format = %Ln
53
```

Рис. 3: Screenshot

Логи доставки LMTP

```
Nov 30 11:18:28 server postfix/smtpd[21729]: warning: run-time library vs. compile-time header version mismatch: OpenSSL 3.5.0 may not be compatible with OpenSSL 3.2.0
Nov 30 11:18:28 server postfix/smtpd[21729]: connect from client.dgavdadaev.net[192.168.1.30]
Nov 30 11:18:28 server postfix/smtpd[21729]: C43522034B5F: client=client.dgavdadaev.net[192.168.1.30]
Nov 30 11:18:28 server postfix/cleanup[21731]: C43522034B5F: message-id=<20251130111828.BB9684130A7F@client.dgavdadaev.net>
Nov 30 11:18:28 server postfix/smtpd[21729]: disconnect from client.dgavdadaev.net[192.168.1.30] ehlo=2 starttls=1 mail=1 rcpt=1 data=1 quit=1 commands=7
Nov 30 11:18:28 server postfix/qmgr[21597]: C43522034B5F: from=<dgavdadaev@client.dgavdadaev.net>, size=565, nrcpt=1 (queue active)
Nov 30 11:18:28 server postfix/local[21732]: C43522034B5F: passing <dgavdadaev@dgavdadaev.net> to transport=lmtp
Nov 30 11:18:28 server dovecot[21650]: lmtp(21734): Connect from local
Nov 30 11:18:28 server dovecot[21650]: lmtp(dgavdadaev)<21734><sye2MAQoLGnmVAAuWDt2w>: msgid=<20251130111828.BB9684130A7F@client.dgavdadaev.net>: saved mail to INBOX
Nov 30 11:18:28 server postfix/lmtp[21733]: C43522034B5F: to=<dgavdadaev@dgavdadaev.net>, relay=server.dgavdadaev.net[private/dovecot-lmp], delay=0.02, delays=0/0/0.01/0.01, dsn=2.0.0, status=sent (250 2.0.0 <dgavdadaev@dgavdadaev.net> sye2MAQoLGnmVAAuWDt2w Saved)
Nov 30 11:18:28 server dovecot[21650]: lmtp(21734): Disconnect from local: Logged out (state=READY)
Nov 30 11:18:28 server postfix/qmgr[21597]: C43522034B5F: removed
```

Рис. 4: Screenshot

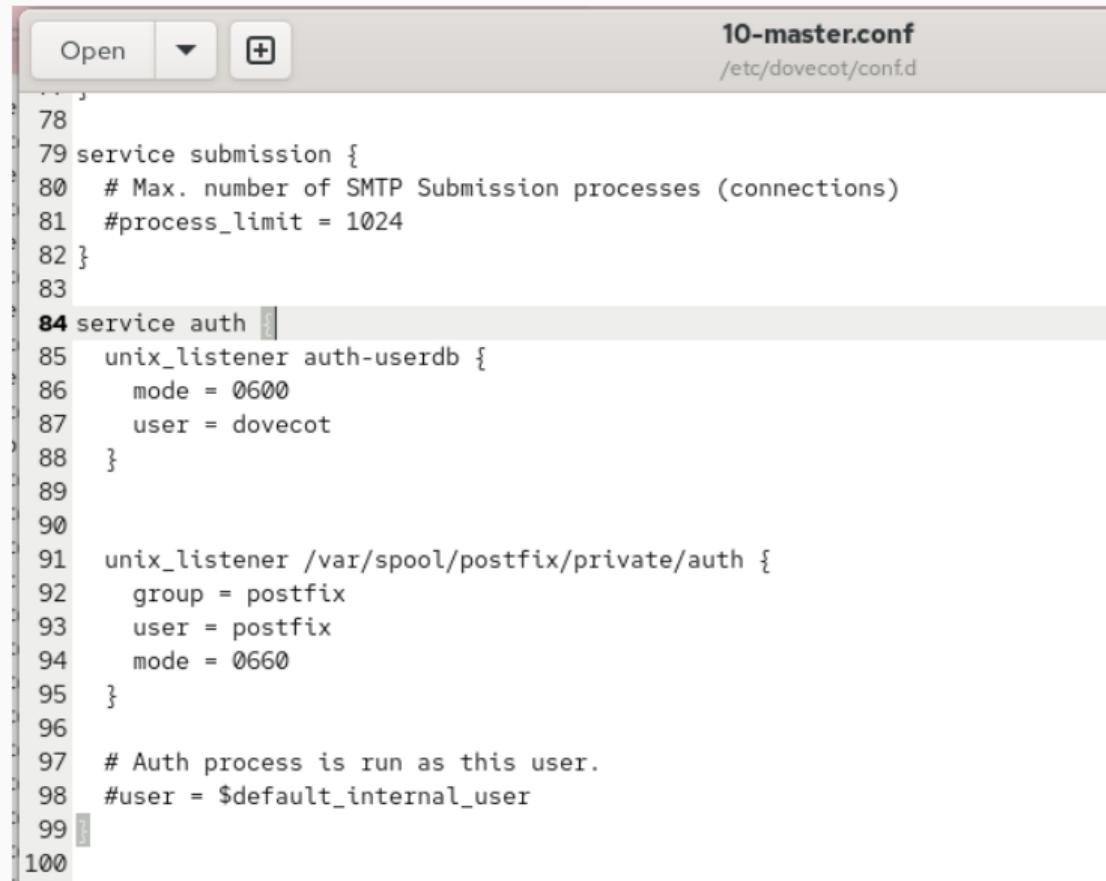
Проверка Maildir

```
[dgavdadaev@server.dgavdadaev.net ~]$ MAIL=~/Maildir/ mail
s-nail version v14.9.24. Type `?' for help
/home/dgavdadaev/Maildir: 2 messages 1 new
  1 dgavdadaev      2025-11-30 11:04  18/668  "test1
▶N 2 dgavdadaev@client.dg 2025-11-30 11:18  21/859  "LMTMP test
&
[-- Message 2 -- 21 lines, 859 bytes --]:
Date: Sun, 30 Nov 2025 11:18:28 +0000
To: dgavdadaev@dgavdadaev.net
Subject: LMTMP test
Message-Id: <20251130111828.BB9684130A7F@client.dgavdadaev.net>
From: dgavdadaev@client.dgavdadaev.net

.
& q
Held 2 messages in /home/dgavdadaev/Maildir
[dgavdadaev@server.dgavdadaev.net ~]$
```

Рис. 5: Screenshot

Настройка службы auth в Dovecot



The screenshot shows a code editor window with the file **10-master.conf** open at the path **/etc/dovecot/conf.d**. The file contains configuration for the Dovecot master service, specifically for the submission and auth services.

```
78
79 service submission {
80     # Max. number of SMTP Submission processes (connections)
81     #process_limit = 1024
82 }
83
84 service auth
85     unix_listener auth-userdb {
86         mode = 0600
87         user = dovecot
88     }
89
90
91     unix_listener /var/spool/postfix/private/auth {
92         group = postfix
93         user = postfix
94         mode = 0660
95     }
96
97     # Auth process is run as this user.
98     #user = $default_internal_user
99
100
```

Настройка ограничений SMTP

```
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_sasl_type = dovecot'
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_sasl_path = private/auth'
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_recipient_restrictions = reject_unknown_recipient_domain, permit_mynetworks, reject_non_fqdn_recipient, reject_unauth_destination, reject_unverified_recipient, permit'
[root@server.dgavdadaev.net server]# postconf -e 'mynetworks = 127.0.0.0/8'
[root@server.dgavdadaev.net server]#
```

Рис. 7: Screenshot

Изменения в master.cf

```
1 #
2 # Postfix master process configuration file. For details on the format
3 # of the file, see the master(5) manual page (command: "man 5 master" or
4 # on-line: http://www.postfix.org/master.5.html).
5 #
6 # Do not forget to execute "postfix reload" after editing this file.
7 #
8 # =====
9 # service type  private unpriv  chroot  wakeup  maxproc command + args
10 #          (yes)   (yes)   (no)    (never) (100)
11 # =====
12 smtp      inet  n      -      n      -      -      smtpd
13 #smtp     inet  n      -      n      -      1      postscreen
14 #smtpd    pass  -      -      n      -      -      smtpd
15 #dnsblog  unix  -      -      n      -      0      dnsblog
16 #tlsproxy unix  -      -      n      -      0      tlsproxy
17 # Choose one: enable submission for loopback clients only, or for any client.
18 #127.0.0.1:submission inet n      -      -      -      smtpd
19 #submission inet n      -      n      -      -      smtpd
20 # -o syslog_name=postfix/submission
21 # -o smtpd_tls_security_level=encrypt
22 # -o smtpd_sasl_auth_enable=yes
23 # -o smtpd_tls_auth_only=yes
24 # -o local_header_rewrite_clients=static:all
25 # -o smtpd_reject_unlisted_recipient=no
26 # Instead of specifying complex smtpd_<xxx>_restrictions here,
27 # specify "smtpd_<xxx>_restrictions=$mua_<xxx>_restrictions"
28 # here, and specify mua_<xxx>_restrictions in main.cf (where
29 # "<xxx>" is "client", "helo", "sender", "relay", or "recipient").
30 # -o smtpd_client_restrictions=
31 # -o smtpd_helo_restrictions=
32 # -o smtpd_sender_restrictions=
33 # -o smtpd_relay_restrictions=
34 # -o smtpd_recipient_restrictions=reject_non_fqdn_recipient,reject_unknown_recipient_domain,permit_sasl_authenticated,reject
35 # -o milter_macro_daemon_name=ORIGINATING
36 # Choose one: enable submissions for loopback clients only, or for any client
```

Проверка SMTP AUTH

```
[root@client.dgavdadaev.net client]# telnet server.dgavdadaev.net 25
Trying 192.168.1.1...
Connected to server.dgavdadaev.net.
Escape character is '^].
220 server.dgavdadaev.net ESMTP Postfix
EHLO test
250-server.dgavdadaev.net
250-PIPELINING
250-SIZE 10240000
250-VRFY
250-ETRN
250-STARTTLS
250-AUTH PLAIN
250-ENHANCEDSTATUSCODES
250-8BITMIME
250-DSN
250-SMTPUTF8
250 CHUNKING
AUTH PLAIN ZGdhdmRhZGFldgBkZ2F2ZGFkYWV2ADEyMzQ1Ng==
235 2.7.0 Authentication successful
quit
221 2.0.0 Bye
Connection closed by foreign host.
[root@client.dgavdadaev.net client]#
```

Рис. 9: Screenshot

Настройка сертификатов и TLS в Postfix

```
[root@server.dgavdadaev.net server]#  
[root@server.dgavdadaev.net server]# cp /etc/pki/dovecot/certs/dovecot.pem /etc/pki/tls/certs/  
[root@server.dgavdadaev.net server]# cp /etc/pki/dovecot/private/dovecot.pem /etc/pki/tls/private/  
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_cert_file = /etc/pki/tls/certs/dovecot.pem'  
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_key_file = /etc/pki/tls/private/dovecot.pem'  
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_session_cache_database = btree:/var/lib/postfix/smtpd_scache'  
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_security_level = may'  
[root@server.dgavdadaev.net server]# postconf -e 'smtp_tls_security_level = may'  
[root@server.dgavdadaev.net server]# █
```

Рис. 10: Screenshot

Изменения master.cf для submission (587)

```
master.cf
/etc/postfix

1 #
2 # Postfix master process configuration file. For details on the format
3 # of the file, see the master(5) manual page (command: "man 5 master" or
4 # on-line: http://www.postfix.org/master.5.html).
5 #
6 # Do not forget to execute "postfix reload" after editing this file.
7 #
8 # -----
9 # service type  private unpriv  chroot  wakeup  maxproc command + args
10 #          (yes)   (yes)    (no)    (never) (100)
11 # -----
12 smtp    inet  n      -       n       -       smtpd
13 #smtp    inet  n      -       n       -       1       postscreen
14 #smtpd   pass  -      -       n       -       smtpd
15 #dnsblog unix  -      -       n       -       0       dnsblog
16 #tlsproxy unix  -      -       n       -       0       tlsproxy
17 # Choose one: enable submission for loopback clients only, or for any client.
18 #127.0.0.1:submission inet n      -       -       -       smtpd
19 submission inet n      -       n       -       -       smtpd
20 # -o syslog_name=postfix/submission
21 | -o smtpd_tls_security_level=encrypt
22 -o smtpd_sasl_auth_enable=yes
23 # -o smtpd_tls_auth_only=yes
24 # -o local_header_rewrite_clients=static:all
25 # -o smtpd_reject_unlisted_recipient=no
26 #     Instead of specifying complex smtpd_<xxx>_restrictions here,
27 #     specify "smtpd_<xxx>_restrictions=$mua_<xxx>_restrictions"
28 #     here, and specify mua_<xxx>_restrictions in main.cf (where
29 #     "<xxx>" is "client", "helo", "sender", "relay", or "recipient").
30 # -o smtpd_client_restrictions=
31 # -o smtpd_helo_restrictions=
32 # -o smtpd_sender_restrictions=
33 # -o smtpd_relay_restrictions=
34 -o smtpd_recipient_restrictions=reject_non_fqdn_recipient,reject_unknown_recipient_domain,permit_sasl_authenticated,reject
35 # -o milter_macro_daemon_name=ORIGINATING
36 # Choose one: enable submissions for loopback clients only, or for any client.
37 #127.0.0.1:submissions inet n      -       -       -       smtpd
38 #submissions  inet n      -       n       -       -       smtpd
```

Настройка firewall

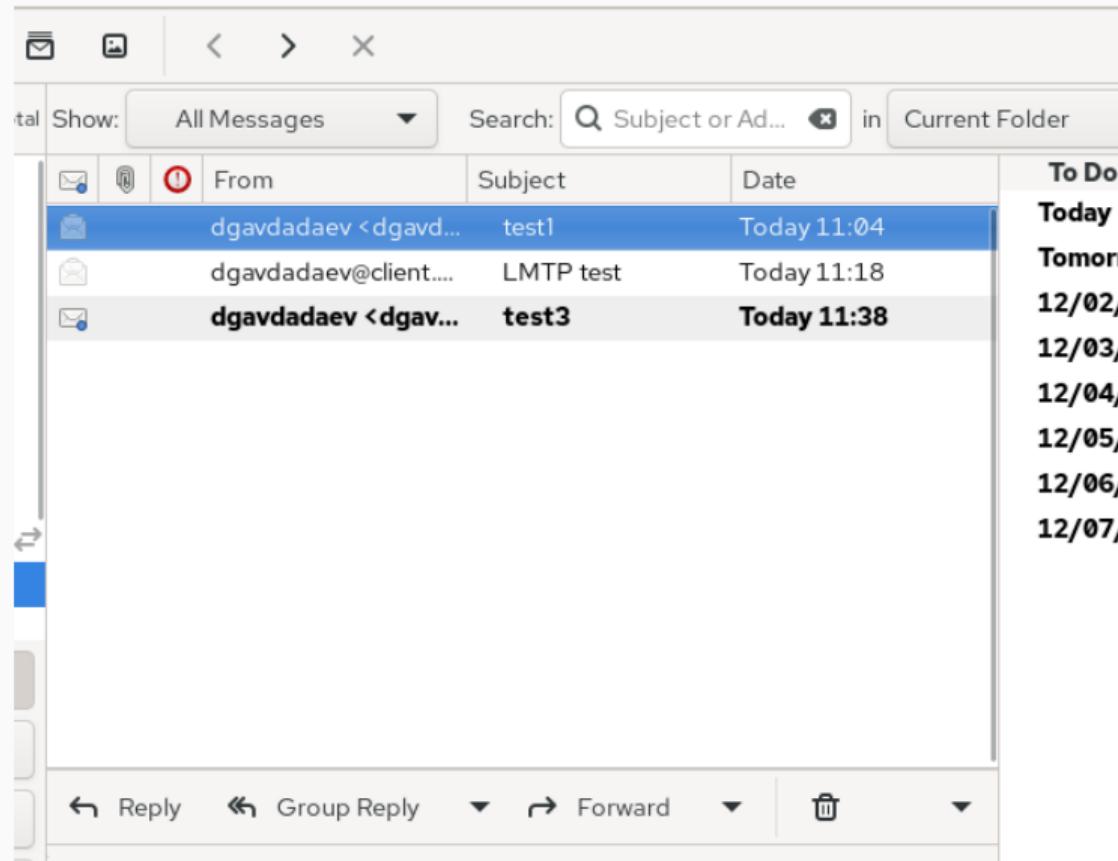
```
[root@server.dgavdadaev.net server]# cp /etc/pki/dovecot/certs/dovecot.pem /etc/pki/tls/certs/
[root@server.dgavdadaev.net server]# cp /etc/pki/dovecot/private/dovecot.pem /etc/pki/tls/private/
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_cert_file = /etc/pki/tls/certs/dovecot.pem'
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_key_file = /etc/pki/tls/private/dovecot.pem'
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_session_cache_database = btree:/var/lib/postfix/smtpd_scache'
[root@server.dgavdadaev.net server]# postconf -e 'smtpd_tls_security_level = may'
[root@server.dgavdadaev.net server]# postconf -e 'smtp_tls_security_level = may'
[root@server.dgavdadaev.net server]#
[root@server.dgavdadaev.net server]# gedit /etc/postfix/master.cf
[root@server.dgavdadaev.net server]#
[root@server.dgavdadaev.net server]# firewall-cmd --add-service=smtp-submission
success
[root@server.dgavdadaev.net server]# firewall-cmd --add-service=smtp-submission --permanent
success
[root@server.dgavdadaev.net server]# firewall-cmd --reload
success
[root@server.dgavdadaev.net server]# █
```

Рис. 12: Screenshot

Проверка подключения через openssl

```
Timeout      : 7200 (sec)
Verify return code: 18 (self-signed certificate)
Extended master secret: no
Max Early Data: 0
---
read R BLOCK
EHLO test
250-server.dgavdadaev.net
250-PIPELINING
250-SIZE 10240000
250-VRFY
250-ETRN
250-AUTH PLAIN
250-ENHANCEDSTATUSCODES
250-8BITMIME
250-DSN
250-SMTPUTF8
250 CHUNKING
AUTH PLAIN ZGdhdmRhZGFldgBkZ2F2ZGFkYWV2ADEyMzQ1Ng==
235 2.7.0 Authentication successful
quit
221 2.0.0 Bye
closed
[root@client.dgavdadaev.net client]#
```

Отправка через Evolution



Анализ логов сервера

```
Nov 30 11:38:12 server dovecot[23364]: imap-login: Login: user=<dgavdadaev>, method=PLAIN, rip=192.168.1.30, lip=192.168.1.1, mpid=24843, TLS, session=<+SMtTM5ETuDAqAEe>
Nov 30 11:38:35 server postfix/smtpd[24706]: connect from client.dgavdadaev.net[192.168.1.30]
Nov 30 11:38:35 server postfix/tlsmgr[24708]: warning: btree:/var/lib/postfix/smtpd_scache is unavailable. unsupported dictionary type: b tree
Nov 30 11:38:39 server postfix/smtpd[24706]: CCEB82034B5F: client=client.dgavdadaev.net[192.168.1.30], sasl_method=PLAIN, sasl_username=dgavdadaev
Nov 30 11:38:39 server postfix/cleanup[24904]: CCEB82034B5F: message-id=<693931a2736eaeea4e2287547b8da18873bdf9c8.camel@dgavdadaev.net>
Nov 30 11:38:39 server postfix/qmgr[24603]: CCEB82034B5F: from=<dgavdadaev@dgavdadaev.net>, size=561, nrcpt=1 (queue active)
Nov 30 11:38:39 server postfix/smtpd[24706]: disconnect from client.dgavdadaev.net[192.168.1.30] ehlo=2 starttls=1 auth=1 mail=1 rcpt=1 data=1 quit=1 commands=8
Nov 30 11:38:39 server postfix/local[24905]: CCEB82034B5F: passing <dgavdadaev@dgavdadaev.net> to transport=lmtp
Nov 30 11:38:39 server dovecot[23364]: lmtp(24907): Connect from local
Nov 30 11:38:39 server dovecot[23364]: lmtp(dgavdadaev)<24907><6Q61Mr8sLGllYQAAuWDt2w>: msgid=<693931a2736eaeea4e2287547b8da18873bdf9c8.camel@dgavdadaev.net>: saved mail to INBOX
Nov 30 11:38:39 server postfix/lmtp[24906]: CCEB82034B5F: to=<dgavdadaev@dgavdadaev.net>, relay=server.dgavdadaev.net[private/dovecot-lmp], delay=0.02, delays=0.01/0/0.01/0, dsn=2.0.0, status=sent (250 2.0.0 <dgavdadaev@dgavdadaev.net> 6Q61Mr8sLGllYQAAuWDt2w Saved)
Nov 30 11:38:39 server dovecot[23364]: lmtp(24907): Disconnect from local: Logged out (state=READY)
Nov 30 11:38:39 server postfix/qmgr[24603]: CCEB82034B5F: removed
```

Рис. 15: Screenshot

Maildir после тестирования

```
[dgavdadaev@server.dgavdadaev.net ~]$  
[dgavdadaev@server.dgavdadaev.net ~]$ MAIL=~/Maildir/ mail  
s-nail version v14.9.24. Type `?' for help  
/home/dgavdadaev/Maildir: 3 messages 1 unread  
  1 dgavdadaev      2025-11-30 11:04  18/668  "test1  
  2 dgavdadaev@client.dg 2025-11-30 11:18  21/859  "LMTP test  
►U 3 dgavdadaev      2025-11-30 11:38  22/840  "test3  
& q  
Held 3 messages in /home/dgavdadaev/Maildir  
[dgavdadaev@server.dgavdadaev.net ~]$
```

Рис. 16: Screenshot

Итоги

Были настроены:

- LMTP-доставка Dovecot
- SMTP AUTH (SASL)
- защищённый SMTP-submission (587/TLS)
- TLS-шифрование канала
- автоматизация конфигурации в Vagrant

SMTP-сервер работает корректно, письма доставляются успешно.